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Seed Potato Number

THE VALUE OF GOOD SEED POTATOES ¹

W. Stuart, U. S. Dept. of Agr., Washington, D. C.

During the past decade there has been a constantly increasing demand for good seed potatoes. This demand on the part of the grower has been largely due to the constant raising of the standards of seed certification requirements and the accumulation of indisputable evidence of the superiority of certified over uncertified seed potatoes. The current notion so prevalent a few years ago that the source of seed used was of relatively little importance has fewer supporters today than ever before.

Before attempting to discuss the value of good seed it seems desirable to define what the term implies. In attempting such a definition the writer is well aware that his conception in regard to good seed may be at variance with that of others who have perhaps given this subject quite as much consideration as he has, but it is hoped that those present will give their careful attention to the suggestions offered. The first requirement in seed potatoes is that they be as free as possible from seed borne diseases, at least of those which cannot be destroyed through treatment in either the hot or cold corrosive sublimate or formaldehyde solutions. The stock must be true to name and to type of the variety. It must also possess good vigor and high productive capacity. Given such a quality of seed stock its value can only be measured by the degree of care and intelligence exercised in the selection and preparation of the land, its fertilization, proper spacing and of planting the seed pieces, and the cultural care given the growing crop. While all of these factors have an important bearing on the resultant yield none are of such prime importance as the character of the seed used. The mere reiteration of this assertion is, however, not sufficient in itself to convince the average grower of the soundness of the contention.

(1) Paper read at the meeting of Southern Agricultural Works, Atlanta, Georgia, February 3, 1926.

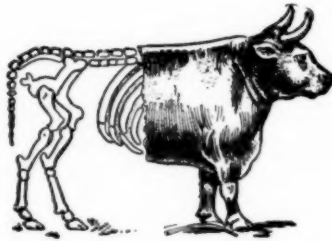
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There is need of more convincing evidence in the shape of data from comparative tests of good seed as typified by certified seed and ordinary seed as exemplified by uncertified seed. It might be well at this point to explain that there are still some lots of certified seed that do not measure up to the standards to which they are supposed to have attained, and that similarly it is possible to find some really excellent seed stocks among the uncertified class. The important fact, however, is that the general average quality of the certified seed is distinctly superior to that of the uncertified stock. This statement is amply substantiated by the data which follows.

In 1919 the Department in cooperation with the Wisconsin Agricultural Experiment Station began a study of the comparative merits of different lots of certified seed potatoes for the purpose of determining the best strains of seed stock of five of the leading commercial varieties. These studies were continued over a period of five years and resulted in showing rather convincingly in the first three years' tests that there were some outstanding strains which produced much heavier yields than others of the same varieties. These differences in some cases amounted to over 100 bushels per acre or nearly double the number of bushels produced by the lowest yielding strains. These data were so outstanding as to at once arrest the attention of those interested in seed potato improvement and indicated one way at least along which more rapid progress could be made in such improvement by inducing those having low yielding strains to discard their stock and purchase the better stock as indicated by the results of the test. The rather general recognition of this principle at the present time is a significant acknowledgement of the value of good seed and makes possible still further improvement of seed stocks.

A year ago last December, 1924, a paper was read by H. C. Moore, of the Michigan Agricultural College, entitled, "Evidence that Certified Seed is Improved Seed," before the annual meeting of The Potato Association of America, in which was presented some interesting data relative to the comparative yields of certified and uncertified seed potatoes in a number of states. These data showed that 15 reports from 8 Canadian provinces indicated an average increase in yield of certified over uncertified seed of 88 bushels per acre; 87 reports from Pennsylvania indicated a 41 bushel increase; 21 Delaware tests showed a gain of 83 bushels; one test in Virginia gave a 20 bushel increase; 144 in Connecticut gave a 53 bushel increase; 31 in Louisiana, 42 bushels; 11 in Kansas, 41 bushels; 8 in South Carolina, 31 bushels; Massachusetts reported a 75 bushel increase but did not give number of reports; Maine showed an 83 bushel increase from 279 tests; 9740 tests in Indiana showed a 44 bushel increase; Kentucky's 220 reports showed an average gain of 42 bushels; 68 tests in New York averaged a 76 bushel increase; Ohio's 268 tests gave an average increase of 48 bushels; New Jersey reported 65 tests with a 45 bushel increase. Missouri's 46 tests showed a 43 bushel increase; Illinois reported on 15 tests

with an average gain of 47 bushels; Nebraska made 64 tests and secured an average increase of 141 bushels; Oregon's 3 reports gave a 150 bushel increase, while in Montana the two reports indicated a gain of 219 bushels; South Dakota gave a 72 bushel increase but the number of tests are not given; in Michigan the 314 reports indicated a 73 bushel increase, while 327 tests of Michigan seed in other states gave an average increase of 50 bushels. The average total results in Canada and the United States based on 11627 reports shows an actual increase of 46.4 bushels per acre.

At the same meeting Dr. C. H. Myers of the College of Agriculture, Ithaca, N. Y., reported an average gain from selected over unselected seed of 48.1 bushels per acre. Many more instances might be cited in which large increases have been noted but it is felt that little would be gained from such additional data. The information at hand is believed to be sufficient to warrant the assertion that certified seed potatoes have won recognition from the grower as to their superior merit for seed purposes.

The value of good seed potatoes can be approximately estimated from the data which have been submitted. It has been shown that considerable differences may occur between two strains of the same variety even though both have been certified. Ample proof, in the shape of yield data, has also been submitted as regards the relative yield from certified and uncertified seed. These data indicate differences ranging from 20 to 219 bushels with an average difference in 11627 tests of 46.4 bushels per acre. If we assume the average farm price of potatoes in the South over a series of years to be approximately \$1.00 per bushel the difference in value to the grower between good and average seed would obviously be represented by the value of 46.4 bushels at \$1.00 per bushel or \$46.40 per acre. A comparison of the extremes would mean a difference in the one case of \$20.00 and in the other of \$219.00 per acre. The only difference in the cost of production of the two lots is in the difference in the cost of the seed stock and the extra cost of handling and marketing the additional yield. The mere differences in yield do not, as a rule, represent the actual differences involved in the use of good or poor seed. The difference to which I wish to call your attention is that relating to the actual quality of the stock produced. The crop from good seed will invariably grade a higher per cent of No. 1 stock than will that from poor seed. This difference may often be as great as 20 per cent but even if it should only be 10 per cent it materially enhances the value of good seed. In addition to the increased monetary value of the crop produced from good seed is that of the greater satisfaction to the grower in growing and handling a high grade product. This in itself should be sufficient to influence the progressive grower to use good seed. When, however, there is the added incentive of a substantial monetary reward it is little wonder that progressive growers are now ardent converts to the use of good seed.

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IT PAYS TO ADVERTISE

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HAVE YOU PAID YOUR DUES?

In the February issue a notification was sent to 320 members informing them that their membership and subscription had expired. A part of this number have not yet responded to this appeal. Kindly send your check or postal money order payable to the Potato Association of America, 108 Baltimore Ave., Takoma Park, D. C. at your earliest convenience.

Active membership	\$2.00 per year
Associate membership	\$1.00 per year

The active members receive the American Potato Journal and the Annual Report. The Associate members receive the American Potato Journal.

"Procrastination is the thief of time."

OREGON POTATO LAW

Oregon is a pioneer in the United States in passing a bill dealing with the grading and certification of potatoes. The use of fraudulent certification tags in this state has made it necessary to have a law to protect both its producers and users of certified seed potatoes. Section 3 and 6 of this law are found on page 92 of this issue. Oregon deserves to be complimented on the move it has taken. But in reading it over and knowing what is taking place in other states we can see the advantages of having universal certification standard and law. If we are not on our guard we may have as many certification laws as there are certification standards. Under such conditions what may be legal in one state may not be in another state. The law governing certified seed should be the same throughout the United States and

certified seed potatoes should mean the same regardless where produced or sold. If for sufficient reason potatoes in some state or states cannot be produced to comply with the accepted universal standard for certified seed they should be sold under another term, or perhaps as certified seed with modifications stated clearly on the certification tags. The former would be better.

NEW YORK CO-OPERATIVE SEED POTATO ASS'N, Inc.

Members of this organization voted recently to take out active memberships for each of its members in the Potato Association of America. Last year they held associate memberships. This step denotes progress and wisdom on the part of the members of the New York Co-operative Seed Potato Ass'n., Inc. It shows that they believe in the true and old maxims—"Seek and ye shall find. Knock and it shall be opened unto you." In the present day potato phraseology we would say—Aim and work to be a better potato grower and you shall be one. But just manual labor alone will not make a better potato producer, knowledge of growing and marketing the crop is fundamental.

DIE KARTOFFEL

The above words translated into English means—"The Potato." It is the name of the publication published semi-monthly by the Potato Growers Association of Germany. According to Die Kartoffel, Vol. 6, No. 3, Feb. 1, 1926, this association has a membership of 3982. "Can United States and Canada do as well as Germany? If we cannot we had better devote our efforts to other things."

THE USE OF GOOD SEED POTATOES BY WASHINGTON GROWERS

George L. Zundel, Extension Plant Pathologist

The last year or two I have furnished your magazine with a number of articles showing the value of the use of good seed that is free from the virus diseases as compared with the common seed that is apt to be more or less badly infected with mosaic and related troubles.

Each year evidence in favor of good seed mounts rapidly and it is surprising to know that even in this enlightened day we still have farmers who think they cannot afford to pay a good price for high grade certified seed. The argument of some of these men put forward that results are only for one year is gradually becoming invalid since we now have results on the control of mosaic for at least five years.

Such a complete record was kept by Mr. P. C. Shemwell of Walla Walla county. For the last five years this gentleman has been project leader for potato work in this county. He has submitted to me a summary of his work for five years which is given in the following table.

TABLE I.

**Five Year Demonstration on the Use of Disease Free Potato Seed,
Walla Walla County, Washington**

Year	Yield of Poor Seed	Yield of Good Seed	Percentage of Increase
1921	125 sacks	250 sacks	100%
1922	100 sacks	200 sacks	100%
1923	110 sacks	225 sacks	113%
1924	85 sacks	200 sacks	135%
1925	60 sacks	150 sacks	150%
Average	96 sacks	205 sacks	113%

Arriving at conclusions from this table we must note that during 1921 we had a bumper crop of potatoes, while in 1925 we have had the poorest potato year known to the Pacific Northwest for a long time. The years 1922, 1923 and 1924 might be termed normal potato years. It is to be noted that during the poorest year that the percentage of increase from the use of good seed is the highest. Or in other words when the diseased seed was subjected to very adverse conditions they absolutely failed to produce potatoes.

For our next illustration of the value of good seed we will jump clear across the state of Washington to Pacific county and review the two year's work on the farm of Nestor Pesola of Naselle. For the last three or four years Mr. Pesola has been project leader for potatoes in his community. It has been a pretty hard proposition to convince these people who are of Finn nationality of the value of good seed, as it is necessary to first convince their leader. Accordingly two years ago the county agent and the extension specialist convinced Mr. Pesola to rogue a portion of his potato field and this year make a comparison with the unrogued seed, and also compare his rogued seed with certified seed. The results are given in Table II.

TABLE II.

**Two Year Roguing Demonstrations with Pride of Multnomah
Potatoes in Pacific County, Washington. 1924 and 1925**

Source of Seed	Yield per 1000 foot row
Local Unrogued Seed	533 Pounds
Local seed rogued in 1924 and used for seed in 1925	833 Pounds
Oregon Certified Seed	1236 Pounds

It is to be noted that the increased yield of rogued over unrogued seed is 56 per cent; while the increase of certified over unrogued seed is 132 per cent.

Another instance occurred in Pacific county this year with Mr. David Rudelle of Brooklyn community. He purchased 100 pounds of the Early Ohio faked certified seed shipped in from the Red River section last spring. When he harvested last fall he found that this seed had produced him 600 pounds. As a comparison Mr. Rudelle purchased 200 pounds of certified Burbank seed from Mr. Strickler of Sherwood, Oregon, and from this seed he harvested 3000 pounds. In other words for each 100 pounds of certified seed planted he harvested 1500 pounds. Now it is well known that the Early Ohio is not as heavy yielder as the Burbank, and even if we subtract 500 pounds of the yield of the 100 pounds of the Burbank seed we still have the demonstration showing that in order to get our best yields we must stick to the bonafide state certified seed and beware of fake certification.

PENNSYLVANIA'S 400 BUSHEL POTATO CLUB

J. B. R. Dickey, State College, Pa.

During the past year 39 farmers in Pennsylvania made measured yields of 400 bushels of potatoes per acre. In 1924 there were 33 400 bushel yields and in 1923 there were 55 who passed the 400 bushel mark. Extremely dry weather in some sections in August and early September caused many promising fields to die off just when the tubers should have been developing most rapidly. Ray Briggs of Luzerne county again led with 571 bushels, failing to equal his mark of 637 bushels made last year.

Interest among farmers in the club continues good and there was a good representation of the members at the State Farm Products Show and much interesting and valuable discussion on methods, etc., at the meetings there. A new feature this year was the display on a special table in the potato show of all the potatoes picked from 40 feet of one row in the record acres. Where the yield is 400 bushels it takes only about 40 feet of an average row to make one bushel. Sixteen of these exhibits reached the show, and were labeled with the grower's name, the county and the yield per acre. This part of the show attracted a great deal of attention and was the subject of much discussion and more or less sceptical head shaking by some who thought themselves good potato growers.

As usual the methods used by the 400 Bushel Club members were tabulated, averaged and presented at the final meeting. These data give us a line on the practices of our most successful growers and has been of great value in potato discussions as an argument for better methods on the part of the rank and file growers. It also gives us an idea as to the trend of our best growers regarding

various cultural methods. A show of hands was called for by those at the meeting who used special treatment, more liberal fertilization etc., on the record acre as compared to the remainder of their crop. If any used such methods on a "pet acre" they were reluctant to admit it and the data given below is an excellent guide as to practical and economical methods.

As usual, 86 per cent of the Club members grew the Russet Rural variety, 58 per cent of these getting their seed direct from northern Michigan, while 25 per cent more secured the seed from Michigan within the past three years. The remainder so far as we can learn planted some strain of smooth Rural. The average amount of seed used per acre was 20 and one-third bushels, a trifle more than last year and 2.6 bushels more than in 1923. The average width of rows was 32 inches, two inches closer than the average last year, while the average spacing in the row was just about 12 inches. The average spacing of rows and seed would require $1\frac{1}{2}$ ounce seed pieces if 20 bushels were planted per acre.

Eighty three per cent put their potatoes on a clover, alfalfa or sweet clover sod. This compares with 74 per cent and 77 per cent for 1924 and 1923, respectively. About 20 per cent the past year had their potatoes in a two year rotation of potatoes in a two year rotation of potatoes and wheat in which clover, (frequently sweet clover), was seeded. Only 5 per cent in 1925 planted on old sods as compared to 18 per cent in 1924, while none "made the grade" in 1925 on corn stubble.

As usual the majority practiced spring rather than fall plowing. Eighty six per cent applied manure, the average amount being 13 tons per acre. Comparing the amount with 10 tons in 1924 and 8.5 in 1923 we see a decided trend toward heavier application. Several the past year made two applications, fall and spring, 84 per cent, however, reported applying part or all of the manure in the fall or early winter rather than in spring just before plowing.

There is great variation as to fertilizer practices. Two out of 37 used no fertilizer, five used nothing but acid phosphate, three used only phosphate and potash while the remainder used a complete fertilizer. Six applied all the fertilizer broadcast and eleven made broadcast applications. of acid phosphate or mixed goods in addition to row applications. About all we can say is that the majority applied a complete fertilizer, at least a large part of which went into the row, and which would average about 3 per cent ammonia and 6 per cent potash. The average total application in 1925 was 970 pounds.

All but one Club member sprayed with Bordeaux in 1925, and in three years only four out of 115 on whom we have records neglected spraying. The average applications in 1925 was 8 against 7 in 1924. Next to seed as free as possible from disease, spraying has no doubt been the most important single factor in producing these large yields.

FAKE CERTIFICATION TAGS OUTLAWED IN OREGON

E. R. Jackman, Extension Specialist in Farm Crops

I have noticed a good deal of alarm by correspondents from other states in regard to the practice of some firms using tags which look like certified seed tags. This will not be a problem in Oregon.

We have here a compulsory potato grading law which makes it necessary for all potatoes to be sold on grade. As part of this law appear the following clauses:

"Section 3. All potatoes sold or offered for sale or shipment in the state of Oregon shall conform to the United States or Oregon grades for potatoes provided however that potatoes that have been passed as "Standard" seed or "Certified" seed by and in conformity with the published standards, rules and regulations as they now are, or may be amended by the potato certification board of the Oregon Agricultural College, are exempt from further inspection."

"Section 6. All "Certified" or "standard" seed potatoes sold or offered for sale or shipment in the state of Oregon shall bear in addition to the label heretofore required, the official tag or seal of the potato certification board of the Oregon Agricultural College or if certified in another state the official tag or seal of the certifying agent of that state; provided that no potatoes may be sold as certified seed potatoes in the state of Oregon unless they have passed the certification requirements of the Oregon Agricultural College, or if certified in another state unless they have been passed by the official certifying agent of that state using standards found by such certification board to be at least equal in all respects to those of the Oregon Agricultural college."

The law further provides a penalty of a fine of from ten dollars to one hundred dollars or imprisonment for ten to thirty days or both for violations. There was no difficulty in securing the passage of this law as it was evident that potato growers wanted it.

The "Standard" seed referred to above is a second class of seed allowing up to fifteen percent of mild mosaic and slightly more stem end discoloration. It is recommended for commercial growers as our supply of certified seed is very light. The new "Standard" seed promises to enjoy a splendid demand from sections interested only in providing table stock. It sold last spring for five dollars to ten dollars per ton over the price of seed of unknown origin.

HAMLIN COUNTY SEED TREATMENT SURVEY

George H. Valentine, Brookings, S. D.

During November a farm and home survey was conducted in eastern Hamlin County, South Dakota. The original purpose

being to get facts of interest and value to extension work and to all those co-operating.

Incidental to this, the Extension Service also collected information relating to seed treatment. The survey consisted of 535 records and give very interesting and valuable information regarding seed treatment. These records were taken in what was thought to be an average farm section. The area does not include some of the best potato growing sections of Hamlin County but should be typical of that part of eastern South Dakota in that regard.

The methods of seed treatments used included corrosive sublimate, hot formaldehyde and cold formaldehyde. Results of survey are shown in the following table.

Methods of seed potato treatment, Hamlin County Survey, 1924 and 1925, per cent of total acres.

Corrosive sublimate	Hot formaldehyde	Cold formaldehyde	No treatment
7.1%	12.4%	61.5%	19.0%

This information indicates that the methods of seed treatment, advised for the best control are the least used. Cold formaldehyde is very good for control of scab but of little or no good for control of rhizoctonia.

The yields from the various records of the survey were classified according to treatments and results are as follows:

Yield of potatoes in bushels per acre, Hamlin County survey

Year	Corrosive sublimate	Hot for- maldehyde	Cold for- maldehyde	Av. of treated	No treatment	Gain
1924	180	104	145	142	86	56
1925	70	79	92	80	58	22

In the above chart this average of all treated yields is compared to those having no seed treatment. It should be kept in mind that all the margin of difference is not due to method of seed treatment as it is true, generally, that the best growers treat their seed and would get a larger yield regardless of seed treatment. However, it is likely that the method of treatment is responsible for part of this increase.

**AN INSTANTANEOUS POTATO SEED TREATMENT
FOR THE PREVENTION OF COMMON SCAB**

Potato seed treatment for scab prevention, even though commonly known and practiced, is of much greater importance than is usually realized. It is undoubtedly the most profitable single means of reducing the enormous annual losses due to this disfiguring disease.

In fact seed treatment of potatoes frequently transforms the growing of this crop from an unprofitable to a profitable industry.

Scab occurs throughout most of the potato growing districts of the United States; the yearly loss from this cause to the growers of one California County alone has been placed as high as \$300,000. Carried on the seed and persisting for years in the soil, once it has been introduced, common scab both reduces the total yield and greatly impairs the quality of the potato crop. This loss will never be completely eliminated until that time when potato breeders, plant disease experts and practical growers have combined to produce a sufficient number of varieties that are not susceptible to scab, to suit both the varied climatic and soil conditions of our extensive country and the diversified tastes of the potato consuming public. In the meantime a consistent program of preventive measures headed by seed treatment will be a source of increasing profits to the potato grower.

Aside from the resistance to scab of the planted variety, the amount of this disease on a given crop depends upon (1) the scab on the seed and (2) the scab present in the soil. Disinfection will eliminate the disease from the seed and prevent the introduction of the infection into the soil. However, treatment has so far failed to reduce materially the amount of scab the crop will pick up from infested soil. Therefore, owners having soil free from scab should diligently protect it by seed treatment.

Potato seed treatment, therefore has two functions:

1. The well known and profitable expedient of securing the maximum yield of salable potatoes in any given crop.
2. The less appreciated but even more important effect of protecting valuable potato ground from costly contamination.

Although the slight investment in disinfectant, in the first case pays immediate dividends, those accruing in the second case are far more important since it means continued future dividends.

A New Method of Seed Treatment

The two disinfectants which have been in use for years for seed potato treatment are formalin or formaldehyde and bichloride of mercury, (corrosive sublimate). Both of these chemicals are effective in controlling scab; and the mercury bichloride will also control the "black scurf" or rhizoctonia. However, inherent faults and the inconvenience of application has been a drawback to their wider use.

Probably the principal factors which militated against the general use of mercury bichloride are: its rapid deterioration during use, the uncertainty of its strength after the first treatment, the long period of treatment required, its injurious effect on the seed germination, the impracticability of treating cut seed pieces and its highly poisonous effect to men and animals. Formalin or formaldehyde while not poisonous requires the long period soak for cold treatment, is disagreeable to handle on account of its odor, is injurious to the

NORTHERN
IDEAL CERTIFIED IRISH COBBLER SEED POTATOES
Grown by
THE NORTHERN IDEAL SEED FARMS
Sudbury — Ontario

seed germination and cannot be applied safely to cut seed pieces. While both these disinfectants may be used for a short period hot liquid treatment, neither of them afford the seed potatoes any protection from soil rots and scab or "black scurf" infection.

The results of seed treatment with these chemicals obtained by growers in large potato producing sections, where they have been used consistently, leave no doubts as to the wisdom of seed disinfection's adaption or of the financial returns to be obtained. It is freely admitted by the most enthusiastic advocates of the two disinfectants that they do not constitute the ultimate and ideal methods of seed potato disinfection.

Recently a new disinfectant for scab and rhizoctonia, which is claimed to overcome the disadvantage of the mercuric bichloride and formaldehyde treatments, has been marketed under the name of Semesan Bel. This product contains the powerful seed disinfectant known technically as hydroxymercurichlorophenol, or commonly, as chlorophenol mercury.

Semesan Bel is the first disinfectant ever offered the grower which gives him an instantaneous cold treatment for seed potatoes. It protects them against seed and soil-borne diseases from the time they are planted until the plants are fully dependent upon their own roots. This disinfectant can be applied either as a powder for dusting the seed or as a water suspension into which the seed is only momentarily immersed. Seed pieces may also be sprinkled with this suspension.

Treatment of **cut** seed pieces is recommended, and where the liquid disinfection is employed, only draining is necessary before planting. The dipping in Semesan Bel suspension requires a minimum of time and apparatus. Two men using bushel wire baskets, two-thirds of a barrel as a vat and a drain board can treat four hundred bushels of tubers a day. The powdered Semesan Bel may be applied to whole or cut seed pieces, but the latter must be dried before being dusted. Only a few minutes agitation of the seed and dust in an old cider barrel, butter church or milk can, is required for dry disinfection.

Semesan Bel is effective down to the last drop, is less poisonous than mercuric bichloride, does not deteriorate during use, may be used in all kinds of metal containers, except those made of aluminum, is not injurious to seed germination, forms a corky layer upon the cut surfaces of seed pieces which protects them from soil rots; and it may be employed for sweet potatoes, or other roots,

tubers, corms and bulbs. Two years field experience during the development of this product indicates that it is as effective as mercury bichloride or formaldehyde for controlling rhizoctonia (black scurf) and common scab and far superior to these chemicals in promoting the growth of healthy plants and larger yields of unblemished crops.

Summary

1. Seed treatment is the most effective single means of combating common scab.
2. It is useful for two purposes, to minimize the amount of scab in a given crop, and to protect valuable land against scab infestation.
3. Formalin and mercuric bichloride are in wide and profitable use, as seed potato disinfectants, but possess marked disadvantages.
4. An organic mercury disinfectant, Semesan Bel, recently developed for potatoes, offers the advantageous possibility of disinfecting seeds either by a dusting method or by an instantaneous cold dipping process.
5. Improved diseased control and increased crop yield results appear possible from the seed treatment of potatoes with Semesan Bel.
6. Semesan Bel may be used for either white or sweet potatoes.

THE POTATO SITUATION

A Brief Review of Acreage, Yield, and Price Statistics that have a Bearing on the Present Outlook

H. R. Smalley

On December first last, the average farm price of potatoes in the United States was \$1.87 per bushel—the highest price in the past sixty years. Except for the extremely high cost of seed, the acreage for 1926 would no doubt be greatly expanded. This and other factors, which will be discussed below, indicate that the increase in acreage will be moderate and that, barring an extremely high yield per acre, the crop of 1926 will not be greater than consumption needs.

There is an old saying among farmers that "dear seed in the spring means cheap potatoes in the fall." Ordinarily there is a good deal of truth in this saying. In 21 out of 27 years, a higher price on any December 1st than for the previous December 1st has resulted in a larger acreage the following year. For example, in 1921 potatoes were \$1.11 per bushel on December 1st, and as a result of this favorable price the acreage was expanded in 1922 by almost 500,000 acres, and the price on December 1st of that year was only 58 cents a bushel. However, the short crop of 1919 resulted in an average farm price of \$1.59 on December 1st, but the

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acreage in 1920 was only 3.2 per cent larger than that of 1919,—the extremely high cost of seed serving as an effective check on acreage expansion. Some who are predicting a large increase in potato acreage have probably not given due consideration to the influence of high seed cost. If potatoes were selling at \$5.00 a bushel now, the acreage would most likely be less in 1926 than in 1925.

The total acreage of white potatoes last year was only 3,113,000 as against an average of 3,776,000 for the past ten years. This was the smallest acreage harvested since 1906, and it is, therefore, a

safe bet that many growers will plant a few more acres if they possibly can. But with seed costing \$2.50 to \$3.00 per bushel in most sections and each acre requiring 10 to 15 bushels to plant, it is very doubtful if the 1926 acreage will be more than 10 per cent larger than that of 1925. Such an acreage (roughly 3,425,000) with the average yield of the past five years (107 bushels) would mean a total crop of 366 million bushels. Such a crop would undoubtedly sell at a good price, which would stimulate a further increase in acreage in 1927. In other words, potatoes are sure to be over-produced some years, but there is not great likelihood of this occurring in 1926 unless the unprecedented acre yield of 1924, however, the United States average yield has not been above 110 bushels since 1921; in fact, in four years out of the past ten the yield has been less than 100 bushels per acre.

The high cost of seed is sufficient argument for liberal fertilizing, for certainly growers will want to produce the largest crop possible from a given quantity of seed.

How the Farm Price Varies

Thus far this discussion has been limited to average prices, yields, and production for the United States as a whole. But it is of greater interest to those who are concerned with conditions in particular localities to study these figures for the different states. For convenience, a series of illustrations has been prepared, giving average farm price, yield per acre, surplus or deficiency, and total production for the past five years.

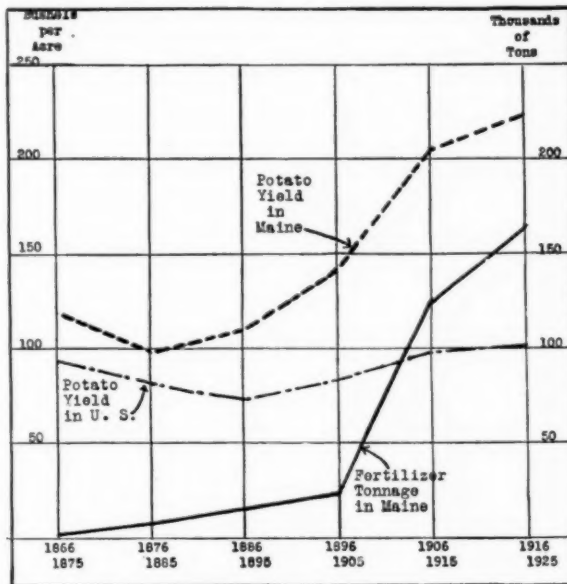
Figure 1 shows that the average farm price (1921-25) of potatoes varied from 65 cents in North Dakota to \$1.96 a bushel in Florida. More interesting than this is the fact that the price often varies greatly in adjoining states. For example, in Michigan the price has averaged 75 cents, but in Indiana \$1.22 a bushel; in Wisconsin 77 cents, but in Illinois \$1.26,—a difference in favor of Indiana and Illinois growers of 47 and 49 cents a bushel, respectively. Conditions for producing the crop are somewhat less favorable in the latter States than in their neighbors to the north, but, even so, the difference in price should be very encouraging to individual farmers in Indiana and Illinois who really want to play the game with good seed, insect and disease control measures, and adequate fertilization. A careful study of Figure 1 will show a number of similar comparisons.

The average yield per acre for the different States is shown in Figure 2. It will be observed that the yield has varied from 57 bushels per acre in New Mexico to 263 bushels in Maine. In general, the best yields are secured in the northeastern States, where fertilizers are applied liberally, and in the irrigated sections of the West. Yields in most of the southern states are very low and in these states the sweet potato crop is of much greater importance than the Irish potato, both from the standpoint of production and of consumption.

The Yield in Maine

The acre yield in Maine so far exceeds that of any other state that it is worthy of special study. It is common knowledge that the bulk of the crop—fully 75 per cent—is grown in Aroostook County, and it is also well known that potatoes in that county receive a ton of high-analysis fertilizer per acre; in fact, it is safe to say that 85 to 90 per cent of the Maine fertilizer tonnage is used on the potato crop. In no other state is a single crop so uniformly and generously fertilized. Without a question, a large part of the increased yield may be ascribed to the fertilizer treatment, although some of it is due to better seed disease and insect control and to favorable climatic conditions.

The acre yield of potatoes and the fertilizer consumption in Maine for the past 60 years, by 10-year periods, are shown graphically on the next page. The yield for the United States is shown for comparison.



Period	Fertilizer Tonnage in Maine	Av. yield of Potatoes in Maine	Av. yield of Potatoes in the U. S.
1866-1876	1000*	119.0	92.9
1876-1885	7500*	98.0	81.2
1886-1895	15000*	110.0	73.2
1896-1905	23000*	142.0	84.4
1906-1915	125000*	206.0	97.5
1916-1925	165000	224.0	101.5

* Estimated.

The relation of fertilization to yield per acre in Maine is well established by these figures. Moreover, the acre yield for the United States indicates that other factors such as improved seed and more careful spraying have not, in the aggregate, greatly affected the yield, since the average yield for the past 10 years has been only four bushels higher than for the preceding 10-year period. On individual farms, especially in commercial areas, the influence of better seed and spraying methods has, of course, been considerable.

The opportunity for increasing the yield of potatoes in other sections by the use of the right kind and quantity of fertilizer is very great.

Surplus and Deficient States

Figure 3 shows the relation of potato production to consumption in the various states. The surplus or deficiency was obtained for each state by combining the average production of Irish and sweet potatoes for the past five years and deducting food and seed requirements. The figures shown are, therefore, estimates and not actual. This map explains the price differences shown in Figure 1. It shows why Pennsylvania farmers receive 40 cents a bushel more than their Wisconsin competitors, for Pennsylvania with an average production of 25 million bushels still needs 10 million bushels more for her own population, while Wisconsin produces an average annual surplus of more than 15 million bushels.

Growers in a surplus area receive the terminal market price, less freight, handling charges, storage and commissions, but the grower who is fortunate enough to be located in a potato-deficient locality receives the terminal price plus most of the freight and other marketing costs, for he can sell them in local markets,—not infrequently at the farm “terms cash, bring your own sacks.”

Figure 3 shows that five states—Maine, Michigan, Wisconsin, Minnesota, and Idaho—have produced an average surplus amounting to 94 million bushels. The average price in these states has been 77 cents per bushel. On the other hand, the five states showing the greatest deficiency—Illinois, Ohio, Massachusetts, Pennsylvania, and Texas—have had an average combined deficiency of 63 million bushels. In these States the farm price has averaged \$1.40 per bushel. The other states, for the most part, fall between these two extremes.

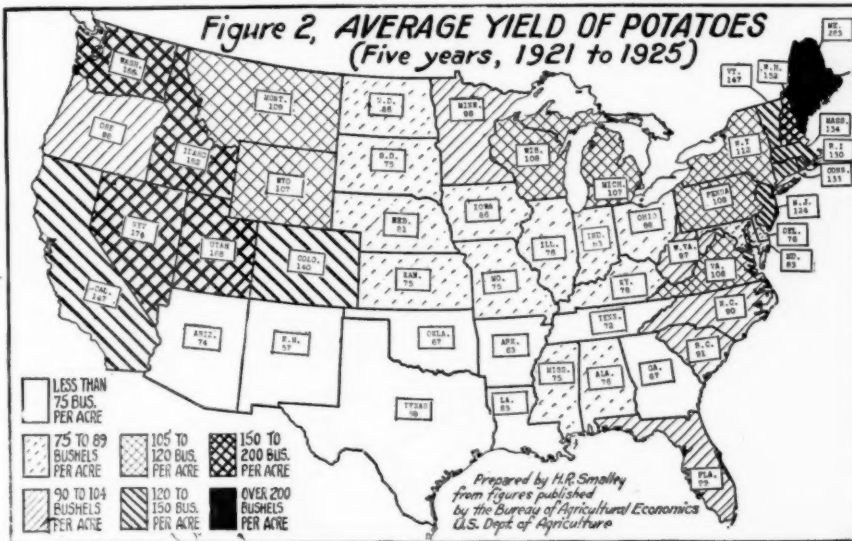
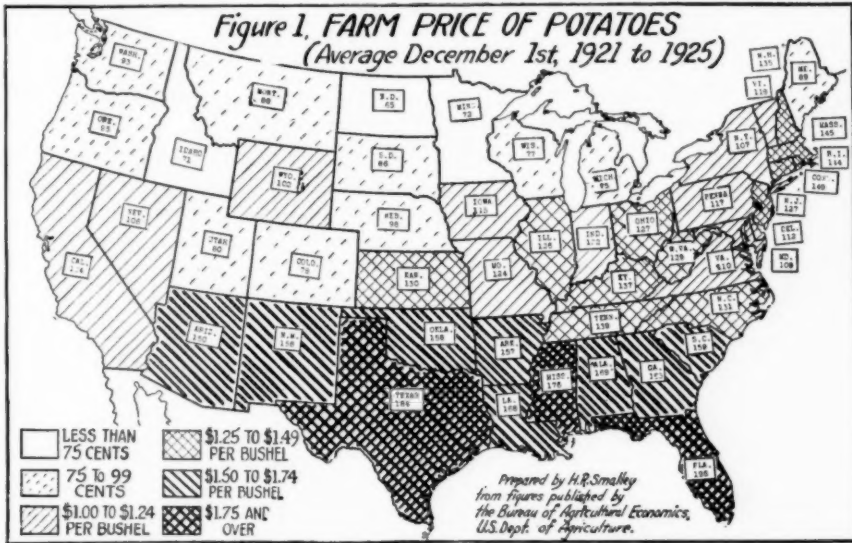
The total production of Irish and sweet potatoes by states is shown in Figure 4, and the actual figures for production, consumption, and surplus or deficiency are shown in Table I.

The Grower's Opportunity

In the surplus states, the grower's only chance to make money depends upon the production of good yields at a relatively low cost per bushel. In order to do this, he must plant good seed, spray thoroughly, and fertilize both liberally and wisely. Good seed and spraying have received much attention in practically all

commercial areas. Fertilizers are quite generally used in the East and South but have received far too little attention in the Middle West.

Growers in regions of deficient production can well afford to strive for maximum yields by giving more attention to good seed, crop protection methods, and to the use of commercial fertilizers, for in these regions relatively few farmers appreciate the importance of these three essentials to profitable potato production.



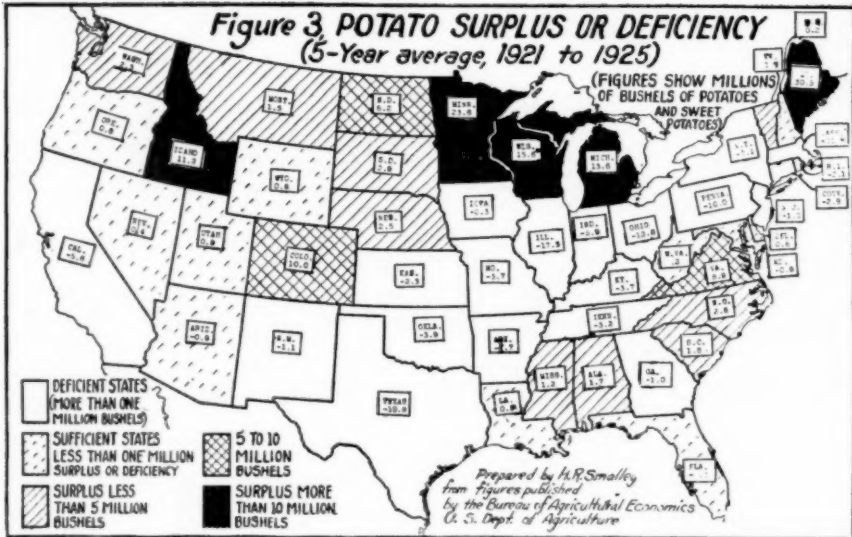
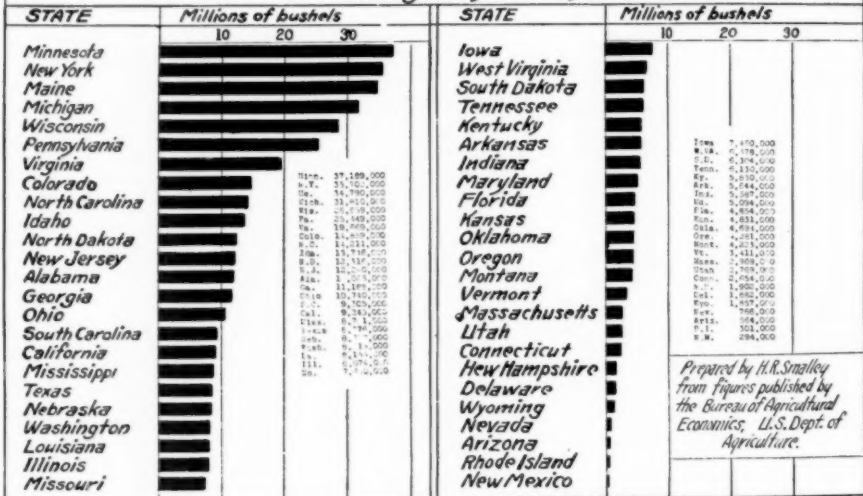


FIGURE 4.
PRODUCTION OF POTATOES AND SWEET POTATOES BY STATES
Five Year Average; 1921 to 1925 (bushels)



SOUTHERN ACREAGE DECREASED. LIGHT SUPPLIES OF OLD POTATOES

**(Contribution from the Fruit and Vegetable Division, Bureau of
Agricultural Economics, U. S. Department of Agriculture)**

The market outlook for old potatoes brightened considerably, following the first official report of plantings and intentions to plant in the southern states. This preliminary estimate of early potato acreage showed only 181,000 acres in 10 important states, compared with 197,600 last year and 227,500 acres two years ago. Aggregate plantings apparently were to be just about the same as in 1923, when Florida potatoes jobbed mostly at \$7.00-\$9.00 per barrel during May as against \$5.00-\$7.00 in May, 1925. Rainy weather delayed the planting and cultivation of early potatoes in the South, so that Florida's main shipping season probably will be as late as that of 1924, with no material movement expected before April. Last season in Florida was a little earlier than usual and peak of shipments occurred about May 1, but in 1924 heaviest movement did not come until the middle of May. There is every indication that old potatoes will meet less competition than usual, at least until late May.

Florida—usually the first of the spring shipping sections— was estimated at first to have only 19,500 acres of early potatoes, or 11 per cent less than in 1925 and 30 per cent less than the 1924 plantings. Acreage in that state appeared to be approximately the same as in 1923. Later reports, however, show some increase in plantings, thus making the acreage in Florida's principal potato belt slightly more than a year ago. Yield per acre may be lighter. Only light shipments come from the trucking areas in the southern part of Florida, and the real-estate boom probably will curtail the early output this year. Shipments from the important section around Hastings do not begin until late March. New potatoes from Florida are without serious competition until May, when Alabama, Georgia and South Carolina become active. In the Southwest, of course, Texas and Louisiana spring crops start moving in April, but most of these shipments go to middlewestern markets. North Carolina does not become an active competitor until late May, and Virginia not until June. The 45 per cent increased acreage given to early potatoes in Alabama is offset somewhat by a decrease in Georgia, but South Carolina's intended plantings of 16,350 acres are 10 per cent more than last year. Louisiana shows a decrease of 30 per cent and is expected to have a total of only 11,000 acres, but the early acreage in Texas appears to be only slightly less than in 1925. Plantings in North Carolina are expected to be almost the same as a year ago, or 21,500 acres, while Virginia may have only 77,000, the lightest plantings in five years. One of the important potato counties on the Eastern Shore, however, re-

ports considerable heavier plantings than last season. Over in southern California, early potatoes occupy at least 15,000 acres, and it may be necessary to find a carlot shipment outlet for part of the crop. Altogether, it looks as if there would be fairly liberal supplies of new potatoes by May. The market prospect for early southern potatoes is good but there is some risk of over-planting late northern potatoes. The high price of seed will tend to check planting in some sections. In past seasons, much high-priced seed has gone to produce low-priced crops. Hence, the old maxim to "plant potatoes when the seed is cheap."

Light Stocks of Potatoes

The official report of potato stocks on hand January 1 gives a striking picture of the relatively light supplies of this product. On January 1 the growers and local dealers in 35 late-potato states are estimated to have had available for sale only 67,127,000 bushels, compared with 119,223,000 last year and a January 1 average of 104,307,000 for the past six years. Merchantable stocks on hand were only slightly more than those remaining on January 1, 1920, from the similarly light crop of 1919. In many respects, this season is comparable to the 1919-1920 season.

In the 19 surplus-producing states only 26 per cent of the total crop, or 60,707,000 bushels, remained for sale at the first of the year, compared with 34 per cent, or 103,890,000 bushels, on January 1, 1925. The six-year average holdings for this group of states has been 92,757,000 bushels. It is this group which furnishes practically all of the carlot shipments of old potatoes between January 1 and the end of the season. In the spring of 1920, when supplies were just about as short as this season, these 19 leading states shipped 51 per cent of their merchantable holdings. In the first half of 1923, the carlot movement of old potatoes was 48 per cent of the January 1 holdings. In 1924, the percentage increased to 58, and last year it was about 56. Stocks on hand at the opening of 1926 were equal to 101,180 cars of 600 bushels each. If only half that quantity is shipped before the season ends, it would mean 50,590 cars, and if as much as 60 per cent is forwarded in carlots the total output after January 1 would be 60,708 cars. Approximately 30,000 cars were shipped during January and February, leaving 20,000 to 30,000 cars yet to come, provided the relative movement is anything like that in recent seasons. After March 1 of the last two years, shipments of old stock averaged 53,000 cars and in 1923 about 59,000 moved after that date, because of the light crop in the South. If it happens that approximately the same percentage of the January 1 stocks is shipped from the principal late-potato states as moved last year, somewhere around 8,000 cars should still have been available in Maine on March 1, about 2,000 in New York, 3,000 each in Michigan and Wisconsin, 2,700 in Minnesota, and about 2,300 each in Colorado and Idaho, or a total of

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around 23,000 cars in the seven states, compared with 48,000 after March 1, 1925. It is possible, however, that the high prices and the delayed movement of southern potatoes will draw considerably more than 23,000 cars from these important shipping states.

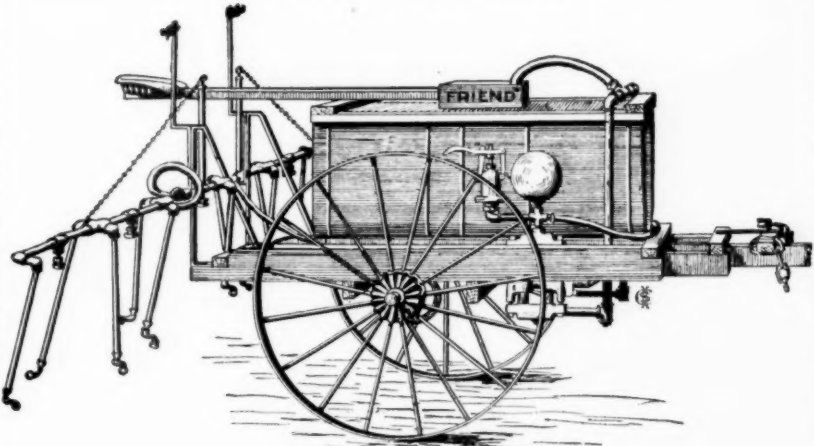
The situation is also affected by stocks remaining in the 16 deficient late-potato states, that group which usually produces insufficient quantities to supply local needs. Those states are estimated to have had only 6,420,000 bushels of merchantable stock on hand January 1, as against 15,333,000 the year before and a six-year average of 11,550,000 bushels. January 1 stocks were only 9 per cent of the total crop in this group, compared with 16 per cent last season, and their supplies available for sale were a half million bushels less than even during the short-crop season of 1919-1920. To supply this deficiency, it is likely that heavier shipments will be necessary from the surplus-producing states,—all of which will tend to increase the ultimate total carlot movement. There is no disputing the fact, however, that holdings are short, and the old-potato market will be influenced partly by this condition during the next two or three months.

Prices Mostly Lower

Prices generally tended downward during the four weeks from February 7 to March 7. Maine Green Mountains were the notable exception; the Aroostook County f. o. b. market held firm around \$3.75-\$3.80 bulk per 100 pounds, and eastern terminal markets still quoted this stock at \$4.40-\$4.60. Eastern sacked Round Whites declined about 15 cents to a city level of \$4.00-\$4.50 and to a range of \$3.85-\$3.90 at western New York shipping points. Long Island Green Mountains brought top of \$4.60-\$4.70 in New York City. After reaching low point, North Central f. o. b. markets for sacked Round Whites advanced 10 cents to 15 cents during early March to \$3.50-\$3.75, possibly as a result of the report of light holdings. Chicago carlot sales also strengthened to \$3.70-\$3.85, but still were about 20 cents below the early February level. Maine and the North Central section appeared to be the bright spots in the old potato situation. Idaho Russet Burbanks declined 15 cents at shipping stations and 25 cents in Chicago during the month, the March 6 Idaho Falls price being \$2.85 and Chicago quotations \$3.85-\$4.00. Sharpest declines occurred in Colorado and Nebraska producing districts, so that the early March returns to growers ranged \$2.50-\$3.00, according to variety. Shipments from the leading late-potato states increased to 3,850 cars during the opening week of this month, but still were about one-fourth less than last season's corresponding movement. Maine's weekly output increased 50 per cent to 1,230 cars. Imports from Canada have been fairly large, corrected reports indicating the equivalent of 4,800 carloads so far this season; but this is only 3 per cent of the domestic shipments.

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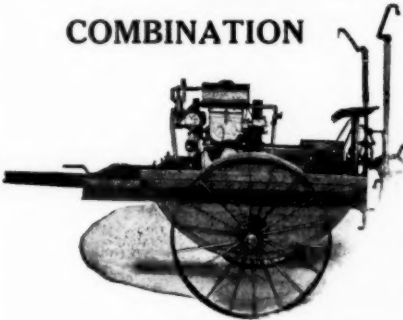
The direct eccentric drive and simple double action pumps mounted along either side of tank, give a quadruplex pump action that puts the "Friend" Traction Potato sprayer in an exclusive class.

Can be furnished with two or one double action pump as desired. Double action pump has 10 gal. per min. capacity. Single pump has 5. 100 gal. tank.

Several types of nozzle booms can be furnished for "Friend" Traction or Combination sprayers. Sizes range from 2 to 6 row and are made with 1, 2 or 3 nozzles to row, depending on type desired.

All "Friend" sprayers and accessories are built for lasting service, with only the best material.

COMBINATION



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A very economical sprayer to own as it can be used for field or orchard work with equal success.

The single unit motor-pump is a giant for work and the simplicity of the whole machine makes it pleasing to the eye and economical to operate.

Made in four motor-pump sizes; 5, 8, 10 and 12 gal. per min. pump capacity. All have 150 gal. tank.

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POTATO NOTES

California.—The acreage of early potatoes in the San Diego district, Southern California, is between 2500 and 3000 acres. Last year the acreage in this same district was about 600 acres. Portion of the crop was almost a total failure. We estimate that the district will produce about 65 per cent of a normal crop by the materially increased acreage; even with the poor production will produce an excess over last year.—**H. G. Zuckerman, Feb. 16.**

Kansas.—The Kaw Valley potato acreage will be about the same as last year. A large number of the growers bought their seed last year and consequently plan on the usual acreage. A few of the smaller growers who did not buy seed last fall are debating about their plantings.

The soil is in excellent condition due to liberal use of cover crops following the crop last year. Early indications are that 90 per cent of the acreage will be planted with treated seed. The hot formaldehyde method will be used almost entirely.

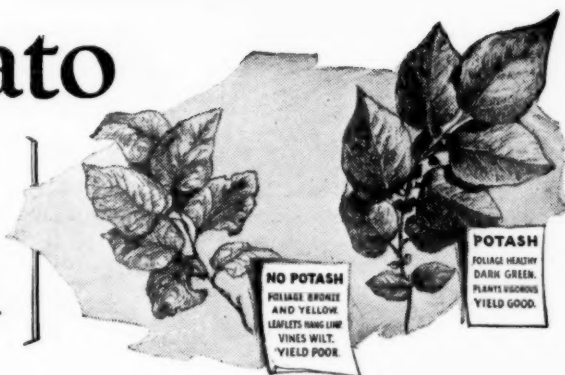
Plans are being made to continue the cost of production work. Last year records showed an average cost of production of 99 cents per bushel. Average sales showed \$1.30 per bushel.—**E. A. Stokdyk, Feb. 26.**

Louisiana.—It is probable that most of the Louisiana Triumph potato crop in the commercial sections has been planted. It appears that the acreage in Louisiana is about normal. This matter, however, has not been established by any systematic effort, but is simply an estimate on the part of the writer. As usual, certified seed of the Triumph variety has been extensively planted, the most of this certified stock coming from the states of Nebraska and Montana. A cooperative certified seed pool through the Farm Bureau reached the proportions of 57 carloads. This is twice the number of cars by this organization last year, and growers are beginning to appreciate the value of a collective purchase of their certified seed supplies. Under an agreement with the Louisiana Farm Bureau Federation, no certified seed potatoes are purchased without the stocks having been approved by the Extension Specialist in Horticulture of the Louisiana State University.

The Farm Bureau potato organizations have organized for the marketing of their Triumphs, and arrangement has been made with the Federated Fruit and Vegetable Growers to distribute the potatoes for the Exchange. Federal Loading Point Inspection in co-operation with the Louisiana State University Extension Division will be offered the potato growers, and the Farm Bureau Potato Exchange has already arranged for inspection of the potatoes that will move through their organization. Sugar planters are taking more interest in the production of Triumph potatoes, and several large acreages are being planted on this account.

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30 extra bushels per acre

On one plot of clay loam soil, Mr. W. L. Shank, Lancaster County, used a mixture containing 3% nitrogen and 8% phosphoric acid at the rate of 1000 lbs. per acre. The yield was 17.5 bushels of marketable potatoes *more* than where no fertilizer was used. But an adjoining plot gave better results:

This plot was fertilized as above, but with 10% potash in the fertilizer—equal to 100 lbs. of potash per acre. The yield increased to 47.5 bushels of marketable potatoes over the check plot.

The potash fertilizer produced 30 bushels more than the no-potash mixture. Potash Pays!

YOU may eat three hearty meals a day but if your food is unbalanced you know what happens.

A potato plant suffers in a similar way. Its food must be properly balanced . . . it must have nitrogen, phosphoric acid, and potash in correct proportions.

If nitrogen is lacking the leaves turn yellow and the vines lack vigor. Insufficient phosphoric acid delays maturity.

You first notice signs of potash hunger in the foliage. The leaves develop a bronzed and yellow color; later the leaflets hang limp . . . the vines wilt.


Field demonstrations have shown that complete fertilizers containing 80 to 100 lbs. of actual potash per acre bring good returns.

On this basis at least 1000 lbs. per acre of a high analysis complete fertilizer containing 8 to 10% potash, or 2000 lbs. per acre if the potash content is 5%, are required for profitable returns. Many successful growers prefer sulfate of potash in their mixtures!

FREE. Potato growers interested in larger yields per acre will find useful information in the newly revised booklet "Better Potatoes." If you would like to receive a copy just send your name and address to the office below.

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POTASH

Mr. M. Hull of the Extension Division gave the first demonstration in the hot formaldehyde treatment of scab for the prevention of scab. Two carloads of seed were treated at the Penitentiary Farm by this method. It is probable that the hot formaldehyde treatment will be largely substituted for the cold method next year.

The Annual Potato Tour, during the latter part of April, will be featured again this year, and word from Nebraska indicates that a good delegation of growers from that state is expected to come for this event. It is probable that the tour will be held during the week beginning with the 19th of April. As usual, certified seed will be featured on this tour, and studies will be made with the certified stocks from the various states. At the College Farm this year at Baton Rouge an opportunity will be given to see the Montana lots of the tests. Last year the tour was favored with 13 out-of-state guests, and it is hoped that this year will see a large increase in numbers.—**G. L. Tiebout, Mar. 3.**

Nassau County, Long Island, N. Y.—The normal potato acreage for this county is 10,000 acres. The estimate for 1926 is 8,000 acres. This decrease is due largely to real estate development. Being only a few miles from New York City the demand for farms for other than agricultural purposes is constantly increasing. Many farms are being cut up into building lots, etc. The price of farm land here is too high on which to raise potatoes.—**H. J. Evans, March 4.**

Ontario.—Quotations on certified seed potatoes during February averaged \$3.50 to \$4.00 per 90 lb. bag f. o. b. shipping point and quite a few sales were made at these prices for April delivery.

The seed potato market is usually quiet during February in Ontario and this year was no exception to the rule. Very little shipping is usually done until after the middle of March. The present prospects point to a good demand for certified seed potatoes this spring and growers expect that the present prices will hold or may even firm up a little later on.

The table stock market has been fair but dealers appear to be very uncertain which way the market will go later and do not appear to be stocking up to any extent at the present prices. Table stock has averaged around \$2.75 to \$3.25 per 90 lb. bag on track in car lots wholesale, \$3.00 to \$3.50 retail. Some cars coming in from the west have unsettled the present market a little.

Dealers appear to be in the market only for car lots that can be turned over quickly to the consumers and are not anxious to buy ahead of present needs; not until the situation regarding supply and demand for the future is more clear to them.

Considerable stocks of Irish Cobblers are held in storages in the cities presumably to be sold at fancy prices for seed purposes in spring, growers and others are cautioned that all seed potatoes sold as certified must bear the official tag "Extra No. 1" otherwise it is not certified.—**J. Tucker, Mar. 3.**

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GREEN MOUNTAINS AND BLISS TRIUMPHS

6,000 bu. GREEN MOUNTAINS

SOLD OUT OF TRIUMPHS FOR THIS SEASON

CROSBY, NORTH DAKOTA

Oregon.—Practically all of the certified seed for sale has been sold. Most of it was sold last fall at an advance of from 10 to 20 dollars per ton over the price of table stock. What little there is left is now selling at from 80 to 110 dollars a ton. This is mostly Burbank, although there is perhaps 10 or 15 carloads of Netted Gem seed stock left.

The table stock in this state is also about gone. We have had an extremely mild winter, even for this Pacific Coast country and this lessens the demand for potatoes by keeping other vegetables of all kinds in the market all winter. The warm weather for the last month or six weeks has had another effect on the potato market. Last fall in anticipation of high prices, an unusually large amount of potatoes went into storage. For the most part of this was just dry storage in the rears of stores, warehouses, and so on. The warm weather has caused these potatoes to sprout, holders have been alarmed, and so have been dumping the potatoes on the market just as fast as the market could possibly take them. Markets have been pretty draggy for some time and will doubtless continue to be until all of this dry storage stock is cleaned up.

Apparently there is not going to be any increase of acreage in this state. I do not anticipate over a 10 per cent increase in acreage, which would bring it about up to normal.—**E. R. Jackman,** March 1.

Virginia.—With favorable weather conditions prevailing, potato planting has progressed rapidly in the eastern section of Virginia during the past week and a large percentage of the crop is now planted on the lower end of the Eastern Shore Peninsula and in the Norfolk section. Although it is not possible to make an accurate estimate this early in the season as to the exact acreage planted, it is the general opinion that the acreage will be about normal this year.

In the lower end of Northampton County, from Cape Charles southward, practically all available land will be planted this year with a slight increase over last year's planting.

It is expected that the acreage will be slightly reduced in Accomac County because of the failure of the fall crop of seed potatoes in 1925. This necessitates many of the growers buying high priced seed and may to some extent limit the area planted. Some stimulus to planting has been given by large business interests, who are furnishing seed and fertilizer for 20 bbls. of potatoes per acre to be dug in June. This enables many growers to finance much larger plantings than would otherwise have been made. This is rather an undesirable situation, as it tends to greatly increase production in the height of the digging season. A number of the Fertilizer Companies are furnishing fertilizer for 8 bbls. of June dug potatoes per acre.

Considerable rhizoctonia has been noted on seed potatoes from the large northern seed producing areas, and should weather conditions be favorable for its development, injury is likely to occur.—H. H. Zimmerly, Mar. 2.

NOTES ON RECENT LITERATURE

ANONYMOUS.—Trials of the cropping capacities of potatoes.—*Jour. Min. Agr. (Gt. Brit.)*, 32 (1926), No. 10, pp. 929-932.

Variety trials with potatoes conducted at centers in England and Wales during the period 1920-1924 are summarized. Consideration of the results of trials with cut and whole sets of potatoes led J. H. Priestley to report as follows:

"A brief review of these data shows that whilst with few exceptions sets cut and kept protected from sun and drying wind have given better yields than sets cut and left exposed for a few hours in the sun and dry air, there are no experiments which suggest that sets cut and so protected are more liable to misses than whole sets.

"On the other hand sets left in a dry condition frequently show a high proportion of misses, and in some cases when they do so, the yield per plant in cases where growth takes place, is lower than the yield per plant from cut protected sets.

"On the whole, examination of these experimental results strongly supports the conclusion reached previously on other grounds that, quite apart from yield, the certainty of growth from cut sets is much greater if precautions are taken as to how the sets are cut and left."—H. M. Steece.

ANONYMOUS.—(Experimental Farms Note).—*Canadian Horticulturist*, Vol. 48, No. 10, Oct. 1925.

Several factors influence the successful storage of potatoes. These are,—temperature, ventilation, humidity, depth of pile, and sound stock, free from dirt. Potatoes should be stored in as cool a temperature as possible without freezing. A good average temper-



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ature ranges around 36° F. Good ventilation is essential to assist in carrying off excess moisture, particularly where potatoes are stored in large heaps. Control of temperature, moisture, and ventilation can be obtained by using false floors, wall racks and air shafts. Too dry an atmosphere causes shrinkage, therefore a certain amount of humidity is necessary.—**Walter M. Peacock.**

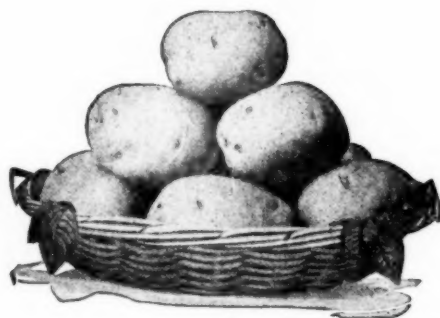
50.823 **MCLEAN, W.**—The Control of leaf-roll disease in potatoes by the diagnosis of "primarily infected" tubers.—*Journ. Agr. Sci. v. 16, part I. p. 149-151. January, 1926.*

"Primarily infected" tubers, i. e., tubers from plants which have become infected during the past growing season, are indistinguishable from healthy tubers in general appearance and in chemical composition. When dried in the laboratory at approximately 60° F. the healthy tubers lost weight more rapidly than "primarily infected" leafroll tubers. Healthy tubers became soft but leafroll tubers remained firm to the touch. It is suggested that primary leafroll may be eliminated from the stock by discarding the tubers that remain firm on drying. Tubers from secondary leafroll plants do not show the "hard" condition consistently, but these should be eliminated by field roguing.—**Philip Brierley.**

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